



North American Owned & Manufactured



# Defense | Avionics | Space

## AND HIGH RELIABILITY SERVICES



### Upscreening Services

Mil-Standards

Custom Products

RF Testing Capabilities

Quality Certifications

Environmental Testing

Special Testing Capabilities

**JOHANSON**  
TECHNOLOGY   
[www.johansontechnology.com](http://www.johansontechnology.com)

**JOHANSON**  
DIELECTRICS   
[www.johansondielectrics.com](http://www.johansondielectrics.com)



ISO 9001



**ITAR**  
Registered

International Traffic In Arms Regulations





# JOHANSON - Companies

JOHANSON Dielectrics, Inc. and JOHANSON Technology, Inc. are located in Camarillo, California, and have over 50 years of experience specializing in the design and manufacture of high quality ceramic products. JOHANSON provides both Mil-Standard screening and COTS Ceramic Chip Capacitors, RF Passives, RF Inductors to high reliability applications globally.

## In-House Testing Capabilities

In addition to manufacturing, the Camarillo facility has a complete High Reliability department with in-house testing capabilities.



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## Comprehensive Mil-Standard Testing Groups A, B & C



## Electrical & Mechanical Inspections

- 100% Electrical Testing
- Cap, DF, IR, DWV, Voltage Breakdown
- 100% Visual Inspection (Mil 883 Class K or S Options)
- Full Data on Serialized Units
- Hot IR Testing
- Temperature Capacitance Coefficient (TCC)
- Temperature Voltage Coefficient (TVC)



## Analytical Testing

- Destructive Physical Analysis (DPA)
- Radiographic Inspection
- SEM Inspection
- Solderability Testing
- Acoustic Microscopy (Sonoscan) Inspection
- XRF Analysis

**CONTACT: JOHANSON with your high reliability needs. . .**

<https://www.johansontechnology.com/ask-a-question>



## RF & Microwave Testing Expertise

- Vector Network Analyzer Measurements
- Resonant Line Measurements for ESR at Frequency



## Environmental Testing

- Burn In / Voltage Conditioning
- Life Testing
- Class H, K or S Element Evaluation
- HALT / HASS Testing
- Humidity Testing
- Moisture Resistance
- Resistance to Solder Heat
- Shear Test / Bond Pull Test
- Bend Testing
- Steam Age
- Temperature Cycling
- Thermal Shock Testing
- Shock / Vibration Testing
- Wire Bond Testing

**RESOURCE: Simulation Software and Designer Libraries. . .**



<https://www.johansontechnology.com/downloads/designer-libraries/>

<https://www.johansontechnology.com/downloads/avago-appcad/>

<https://jitssoft.johansontechnology.com/>

# Available Termination Options

## MLCC Termination Options (Replating of Commercial Products)

Termination Type	Barrier to Prevent Solder Leaching	RoHS	Primary Applications
Ni/Sn	Ni	Yes	All solder applications where RoHS is required. This is Johanson's standard termination used by the largest number of customers. Most likely to be in stock at Johanson or at Johanson authorized distributors.
Ni/SnPb	Ni	No	Military applications where the lead (Pb) mitigates Tin whisker growth.
Flexterm Ni/Sn	Ni	Yes	Flexible terminations for high physical stress applications
Flexterm Ni/SnPb	Ni	No	Flexible terminations for high physical stress applications
Ni/Au Gold Termination	Ni	Yes	Parts are epoxied in place or a mix of solder and epoxy attachment is used. Controlled Au thickness to avoid Gold embrittlement issues when soldering. Premium price.
Cu/Sn (Copper barrier)	Cu	Yes	This non-magnetic termination is best suited for application where very high inductance / magnetic fields are present. Use where RoHS is required. Most common non-magnetic termination.
Cu/SnPb (Copper barrier)	Cu	No	This non-magnetic termination is best suited for application where very high inductance / magnetic fields are present.
PdAg	None	Yes	No plating - solderable thick film PdAg alloy termination. Premium price.
PtAg	None	Yes	No plating - solderable thick film PtAg alloy termination. Premium price.

## Single Layer Termination Options

TiW/Ni/Au	Ni	Yes	Chip & Au wire where capacitor is soldered in place or a mix of solder and epoxy attachment is used.
TiW/Au	None	Yes	Chip & Au wire where capacitor is epoxy attached. Optimum termination for wirebonding. Cannot solder this chip as substantial leaching will occur.

## Lead-Frame Termination Options

Ni	None	Yes	Used in very high-temp applications
Cu/Ni/SnPb	Ni	No	Typically used in military applications
CuSn6 Phosphor Bronze	Ni	No	SnPb plate
Iron-Nickel Alloy	Ni	Yes	Sn plate
Pure Silver Leads	None	Yes	Used in very high power RF. Premium price.

Contact **JOHANSON** to quote your custom lead materials & types.

**Ask a Question:** If you have unique needs or require additional technical information, contact your Johanson Representative or submit a technical request on our website at: <https://www.johansontechnology.com/ask-a-question>

# Application to Products Chart

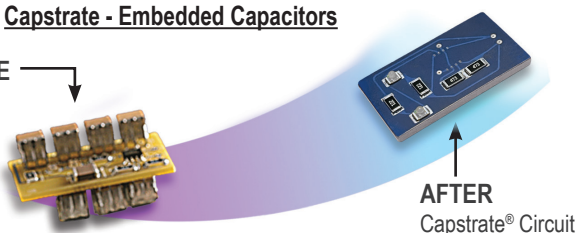
APPLICATIONS	PRODUCTS	Micro/Millimeterwave Single Layer Caps	Thin Film Metallized Substrates	Planar & Discoidal Ceramic Capacitors	Planar & Discoidal Varistors	High Frequency EMI Filters	High Voltage MLCCs (500-6kV)	High Voltage Radial Leaded MLCCs	High Temp Class 1 & Class 2 Dielectrics	High Cap X7R/X5R MLCCs (1 - 100µF)	Safety Certified MLCCs (250 VAC)	Low Voltage NP0, X7R MLCCs	SMPS Stacked MLCCs	RF High Power High-Q MLCCs	RF Integrated Passive Components	RF High-Q MLCCs	RF Inductors
RF Bypass / Decoupling					•	•	•	•	•		•	•					
Connector / Cable Filters			•	•			•	•		•							•
Housing / Chassis Filters			•	•				•									
Mains Filtering Certified							•		•								
Power Conditioning / Rail Filtering					•	•	•	•	•	•		•	•				
SwitchMode Power Supply Filtering						•	•	•	•		•						
EMI / RFI Filtering		•	•	•		•		•			•		•	•			
DC Block / Coupling			•							•		•			•		
Antenna & Impedance Matching		•										•			•	•	
RF Filters (e.g. LC, Pi, BPF, LPF)		•		•								•	•	•	•	•	
Microwave Circuits		•	•									•	•	•	•	•	
Millimeterwave Circuits		•	•														
Power Amplifier Matching		•					•					•			•	•	
RF Circuit Matching		•										•			•	•	
MMIC SubMount			•														
Current Sense																	

07\_PN# MIL-FLYER Mil/Aero HiRel

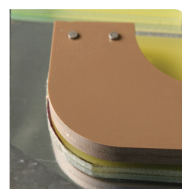
## Collaborative Design Products

### Capstrate - Embedded Capacitors

BEFORE  
Discrete  
Circuit



### Variable Pitch Capacitors



Unique  
Geometries

### Custom Substrates



k values -  
9.3 to 40,000